

Amendments to the Claims:

This listing of claims will replace all prior claim listings in the application:

1-27. (Canceled)

28. (New) A multielectrode for recording a bioelectrical potential difference at a detection site, the multielectrode comprising:

a carrier including an active electrode surface and multiple reference electrode surfaces; and

a plurality of recording pairs, the active electrode surface being a part of more than one of the recording pairs, for recording the bioelectrical potential difference at the detection site multiple times in response to a single stimulus;

wherein the recording pairs are adapted for coupling to processing apparatus for an improved signal-to-noise ratio of the recorded bioelectrical-potential-difference recordings.

29. (New) The multielectrode of claim 28 wherein each active electrode surface is generally centrally positioned on the surface of the carrier.

30. (New) The multielectrode of claim 29 wherein each reference electrode surface is symmetrically positioned between the active electrode surface and an edge delimiting the surface area of the carrier.

31. (New) The multielectrode of claim 28 wherein the carrier comprises multiple separate sub-carriers, each sub-carrier including at least one separate electrode surface, the total number of electrode surfaces being at least three.

32. (New) The multielectrode of claim 28 wherein the electrode surfaces all have a substantially similar size and shape.

33. (New) The multielectrode of claim 32 wherein the reference electrode surfaces all have a substantially similar size and shape.

34. (New) The multielectrode of claim 33 wherein at least one of the size and shape of the reference electrode surfaces is substantially different from at least one of the size and shape of the active electrode surface.

35. (New) The multielectrode of claim 28 wherein the carrier has elevated parts to which the electrode surfaces are coupled.

36. (New) The multielectrode of claim 35 wherein at least one of the electrode surfaces extends on the sides of the elevated parts.

37. (New) The multielectrode of claim 28 wherein the carrier has recesses into which the electrode surfaces are fitted.

38. (New) The multielectrode of claim 37 wherein the electrode surfaces extend on the sides of the recesses.

39. (New) The multielectrode of claim 37 wherein each recess is delimited by vertical edges elevated from the carrier, thereby preventing short-circuiting between adjacent electrode surfaces.

40. (New) The multielectrode of claim 28 wherein electrical conducting material is attached to at least one of the electrode surfaces.

41. (New) The multielectrode of claim 28 wherein at least one of the carrier and a respective one of the electrode surfaces has an adhesive for attaching the multielectrode to the detection site.

42. (New) The multielectrode of claim 28 wherein the carrier is formed by one or more thin layers of an insulating material provided with an electrically conducting pattern of the electrode surfaces.

43. (New) The multielectrode of claim 28 wherein the carrier is provided with three or more sterilized needles, each needle tip constituting at least part of a respective electrode surface.

44. (New) A method for recording and processing a bioelectrical potential difference from a detection site, the method comprising:

recording the bioelectrical potential difference at the detection site multiple times in response to a single stimulus by the multielectrode of claim 28; and

summing the signals recorded at the detection site by at least two of the recording pairs of the multielectrode.

45. (New) The method of claim 44 comprising: inverting at least one of the signals prior to summing.

46. (New) The method of claim 45 comprising: delaying from a starting point of an induced response before inverting and summing.

47. (New) The method of claim 44 comprising: muting at least part of one or more of the signals prior to summing.

48. (New) A process of manufacturing the multielectrode of claim 28, the process comprising:

manufacturing multiple thin layers of an insulating material;

providing the recording pairs on at least one of the layers, each recording pair including the active electrode surface and a different reference electrode surface; and

at least one of the steps being folding, fastening, and glueing the layers of the insulating material to one another.

49. (New) The process of claim 48 wherein at least part of the process is manual.

50. (New) The process of claim 49 wherein at least part of the process is

performed by mechanical manufacturing apparatus.

51. (New) A system for recording signals indicating a bioelectrical potential difference at a detection site, the system comprising:

the multielectrode of claim 28; and

processing apparatus coupled to the multielectrode, the processing apparatus comprising summation apparatus and inversion apparatus.

52. (New) The system of claim 51 wherein the processing apparatus comprises delay apparatus.

53. (New) The system of claim 51 wherein the processing apparatus comprises muting apparatus.